Fact Sheet

Aquifer Protection Permit
Inventory # 100523
Place ID 2669, 2674, 2667, LTF None
Phelps Dodge Miami Mine

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an aquifer protection permit for the subject facility that covers the life of the facility, including operational, closure, and post closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. This document gives pertinent information concerning the issuance of the permit. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards at the Point of Compliance; and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

I. FACILITY INFORMATION

Name and Location

Permittee's Name:	Phelps Dodge Miami, Inc. dba Freeport McMoran Copper and Gold
Mailing Address:	P.O. Box 4444 4342 E. U.S. Highway 60 Claypool, Arizona 85532
Facility Name and Location:	Phelps Dodge Miami, Inc. Mine 4342 E. U.S. Highway 60 Claypool, AZ 85532 in Gila County

Regulatory Status

The Notice of Disposal for the site is listed as received 1/18/85. The first APP application for the site was submitted to the ADEQ in April 1996 for the expansion of the heap leach facilities, with numerous subsequent upgrades and addendums. The permit for the heap leach expansion (No. 103201) was issued on April 30, 1998. The Area-Wide APP application was submitted in April 1997, with a comprehensive update submitted as Addendum B in March 2005. The Area-Wide APP is the subject of this permit. AZPDES Permit AZ0020508 has been issued for the site, and expired in November 2006. Phelps Dodge Miami, Inc. (PDMI) has opted to not renew the permit. Multi-Sector General Permit AZR05B292 has been issued to the site for the discharge of storm water.

The PD Miami mine facility is located within the Pinal Creek Water Quality Assurance Revolving Fund (WQARF) site. The Pinal Creek WQARF site includes the mine sites owned by Phelps Dodge Miami, Inc. (formerly known as the Cyprus Miami Operations, and before that as the Inspiration Operations) and BHP Copper, Inc. (the Miami Mine, the Copper Cities Mine, the Old Dominion Mine, and Solitude Tailings).

Certain source control actions at the WQARF site began in 1986 under an order from the Environmental Protection Agency (EPA) for violations of the Clean Water Act. In 1989, the Pinal Creek site was listed on the WQARF Priority List (and later the WQARF Registry) by the State of Arizona and the Pinal Creek Work Group (consortium of Phelps Dodge Miami (formerly Cyprus Mining Co.), BHP Copper Inc. (formerly Magma Copper Co.) and Inspiration Consolidated Copper Co.), was formed to conduct the remedial actions.

In 1997, a Consent Decree governing the clean up was signed, and was approved by the United States District Court in 1998. While the Consent Decree awaited court approval, an administrative consent order was signed in 1998 to implement an early response action to expedite the construction of a groundwater treatment plant, remove contaminated groundwater at the leading edge of the acid-metal plume, and to prevent further degradation of the perennial reach of Pinal Creek.

The major contaminants of concern at the Pinal Creek WQARF site include aluminum, arsenic, beryllium, cadmium, chromium, copper, cobalt, fluoride, iron, lead, manganese, mercury, nickel, radium, sulfate, total dissolved solids, uranium, and zinc.

Various remedial actions at the Pinal Creek WQARF site have been conducted to date and include: groundwater extraction from the alluvial aquifer, groundwater containment, groundwater slurry walls, a private well replacement program, risk assessments, groundwater and source control feasibility studies, facility upgrades, closure of impoundments, capping of tailings/waste rock piles, pumpback systems, storm water controls, and the construction of two lime neutralization treatment plants.

The PD Miami mine site contains various facilities. In addition to those facilities covered by this permit, some are exempt for APP purposes because they are subject to WQARF, and/ or predate the APP Program. The facilities which are managed by WQARF are being actively remediated in accordance with an approved action plan. Extensive groundwater monitoring and reporting is required under the WQARF program.

Facility Description

The PDMI mine, located adjacent to the Town of Miami, is an open-pit, porphyry-copper mining and smelting operation. Mining in the district started in the 1870's. Inspiration Consolidated Copper Company began large scale mining operations in

1911, and operated almost continuously until its assets were purchased by the Cyprus Miami Mining Company in 1988. Cyprus Miami Mining Company was acquired by a Phelps Dodge parent company in 1999, and renamed PDMI.

Mining of the four open pits at the site temporarily ceased in 2001, although leaching of oxide ore previously placed at the 9/19/34/35 (southern) Leach Area, 27/28 (northern) Leach Area, and 40 Leach Dump continues under the terms of this permit. The mining of sulfide ore ceased in the mid-1980's. Mine activities include solvent extraction/electrowinning (SX/EW) of leach solution collected from continuing oxide leach activities, and the smelting of concentrates received from off-site, at an on-site smelter.

The PDMI property facilities permitted in this permit include 19 process solution impoundments, 18 non-stormwater impoundments (including 1 for closure), 4 leach areas (including 1 for closure), and two slag piles.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY

BADCT for this site will be demonstrated through individual BADCT upgrades for existing facilities.

Inspections and operational monitoring is required, to ensure that facilities are maintained in accordance with BADCT and standard engineering practices, and each drainage potentially impacted by operations will be monitored to assess impact due to mining operations, except for those drainages in which Water Quality Assurance Revolving Fund (WQARF) activities are in progress.

III. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

Monitoring and Reporting Requirements

The mine site is separated into five groundwater sub-basins which include: Tailings Pile, Webster Gulch, Bloody Tanks, Mine Pit and the Oxide Sub-basins. The WQARF facilities are primarily located within the Tailings Pile, Webster Gulch, and Bloody Tanks Sub-basins. The Tailings Piles basin contains tailings piles which predate the APP program. The Webster Gulch sub-basin includes the former Webster Lake and various impoundments and tailings piles which predated the APP program. The eastern boundaries of the Tailings Pile and Webster Gulch sub-basin are bound by Pinal Creek. Pinal Creek contains a pumping well field (Kiser Basin) which extracts the alluvial aquifer groundwater and evaporates the extracted groundwater on tailings piles located in the Tailings Pile and Webster Gulch basins. The Bloody Tanks Sub-basins contains numerous leach dumps which have been actively leached since 1967. The southern boundary of the Bloody Tanks Sub-basin is bound by Bloody Tanks Wash. Numerous separate drainages occur within this sub-basin and flow to Bloody Tanks Wash alluvial aquifer. The Bloody Tanks Sub-basin is not currently being remediated, however pumpback systems and slurry walls occur in the separate drainages as a source control under the WQARF program.

Two APP facilities (impoundments) are located in the Tailings Pile Sub-basin. The groundwater in the alluvial aquifer for this sub-basin is currently being extracted by the Kiser Basin well field east of the impoundments under the WQARF program. The contaminated groundwater being remediated by WQARF would be drawn beyond the POC location to the extraction wells. Therefore, a POC well has been established, but AQLs and ALs are not set for it because of the remedial groundwater pumping down gradient of the APP facility. Limits will be set upon satisfaction of the cleanup goals of the WQARF remedial activities.

Various APP facilities, including process solution ponds and non-stormwater impoundments exist in the Webster Gulch Sub-basin. The easternmost section of the Webster Gulch Sub-basin contains tailing piles which predated the APP program. The tailings and other source areas, such as the former Webster Lake, and other impoundments such as Honeyman and Ellison Pond are being addressed by WQARF. The tailing piles in this sub-basin are over one hundred feet thick and consist of low permeability material. A POC well is established, in the eastern portion of the sub-basin, but AQLs and ALs are not set. Groundwater monitoring at the POC will be deferred to the completion of the WQARF remedial activities. The western portion of the Webster Gulch sub-basin is bounded by leach dumps of the Mine Pit Sub-basin. One impoundment is located at the base of leach dumps which collects process leach solutions. Because this area of western Webster Gulch is not being addressed by WQARF, one POC well will be monitored for compliance with AWQS at this location.

The Bloody Tanks Sub-basin is located along most of the southern boundary of the mine site and is bound by Bloody Tanks Wash. The APP facilities include leach dumps and the associated process solution impoundments. There are numerous separate and distinct drainages within the Bloody Tanks hydrologic basin. The WQARF program is addressing Bloody Tanks Wash through extensive groundwater monitoring and remedial activities including pumpback wells and slurry walls in the alluvial aquifer. Therefore, a POC well has been established without AQLs or ALs set, at each of the separate drainages. Limits will be established upon the completion of the WQARF remedial activities.

The Mine Pit Sub-basin occupies the central portion of the PD mine property. Currently, there are no source control measures implemented by WQARF in this area. Three open pits are located in this sub-basin: the BL Pit, Barney North Pit and the TJ Pit. The BL Pit and the Barney North Pit are classified as non-stormwater impoundments. The western portion of the TJ Pit lies on PDMI property and the eastern portion of the TJ Pit lies on BHP Miami property. BHP uses the TJ Pit as a collection impoundment for in-situ leach solution and impacted stormwater. BHP will manage the TJ Pit and the operational requirements as part of the BHP-Miami Unit area-wide APP #101546. As part of the Compliance Schedule of this permit, PDMI is required to provide additional BADCT information for the BL Pit.

The Oxhide Sub-basin is located on the westernmost southern boundary. The sub-basin is bound by Bloody Tank Wash to the south and is divided into two separate hydrologic drainages, western and eastern drainages. The eastern drainage basin contains two open pits: the Upper Oxhide and Lower Oxhide Pits. The Upper Oxhide Pit is a process solution impoundment with approved BADCT. The Lower Oxhide Pit is classified as a non-stormwater impoundment and, according to the Compliance Schedule of this permit, is required to have additional information to demonstrate BADCT. The western hydrologic drainage of the Oxhide Sub-basin contains various APP facilities. Because no WQARF source control exists in this sub-basin, two POCs, one in the eastern and one in the western drainage, downgradient of the APP facilities are required to be monitored in the Oxhide Sub-basin.

The quarterly compliance monitoring includes the following constituents:

Depth to Water, Water Level Elevation, Field pH, Field Specific Conductance, Field Temperature, Total Dissolved Solids, Fluoride, Nitrate/Nitrite, Sulfate, Antimony, Arsenic, Barium, Beryllium, Cadmium, Cobalt, Chromium, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Thallium, and Zinc.

The biennial sampling suite includes:

Depth to Water, Water Level Elevation, Field pH, Field Specific Conductance, Field Temperature, Total Dissolved Solids, Total Alkalinity, Carbonate, Bicarbonate, Hydroxide, Chloride, Sulfate, Calcium, Magnesium, Potassium, Sodium, Total Cyanide, Fluoride, Nitrate/Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Cobalt, Chromium, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Thallium, Zinc, Gross Alpha Particle Activity, Radium 226+228, Uranium, Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, and Total Xylenes.

Points of Compliance (P.O.C)

POINTS OF COMPLIANCE (POC)					
Well ID	**Type**	**Sub-basin**	**Aquifer**	**Latitude**	**Longitude**
TAA-3*	Monitoring Well	Tailings Pile	Alluvial	33º 25' 19" N	110º 50' 6" W
TAG-3*	Monitoring Well	Tailings Pile	Gila Conglomerate	33º 25' 19" N	110º 50' 6" W
SCW-3*	Monitoring Well	Webster Gulch	Gila Conglomerate	33º 24' 48" N	110º 51' 05" W
SCW-1*	Monitoring Well	Webster Gulch	Gila Conglomerate	33º 24' 40" N	110º 51' 42" W
N28-1	Monitoring Well	Webster Gulch	Dacite	33º 25' 44" N	110º 54' 39" W
DC-2*	Monitoring Well	Bloody Tanks Davis Canyon Drainage	Alluvium	33º 23' 54" N	110º 52' 34" W
DC-4*	Monitoring Well	Bloody Tanks Davis Canyon Drainage	Gila Conglomerate	33º 23' 54" N	110º 52' 34" W
LO-7*	Monitoring Well	Bloody Tanks Live Oak Drainage	Alluvium	33º 23' 38" N	110º 52' 48" W
LO-2*	Monitoring Well	Bloody Tanks Live Oak Drainage	Granite	33º 23' 39" N	110º 52' 58" W
LO-4*	Monitoring Well	Bloody Tanks Live Oaks Drainage	Alluvium	33º 23' 42" N	110º 52' 53" W
A-1*	Monitoring Well	Bloody Tanks Drainage A	Alluvium	33º 23' 30" N	110º 52' 52" W
D-1*	Monitoring Well	Bloody Tanks Drainage D	Schist	33º 23' 20" N	110º 53' 11" W
E-1*	Monitoring Well	Bloody Tanks Drainage E	Schist	33º 23' 12" N	110º 53' 18" W
F-1*	Monitoring Well	Bloody Tanks Drainage F	Schist	33º 23' 10" N	110º 53' 25" W
33-1*	Monitoring Well	Bloody Tanks Drainage F	Granite	33º 23' 32" N	110º 52' 52" W
BB-9*	Monitoring Well	Bloody Tanks 35 Reservoir Drainage	Alluvium	33º 23' 05" N	110º 53' 25" W
BB-10*	Monitoring Well	Bloody Tanks 35 Reservoir Drainage	Schist	33º 23' 05" N	110º 53' 26" W
H-1	Monitoring Well	Oxhide Western Drainage	Granite	33º 22' 31" N	110º 55' 36" W
BT-89	Monitoring Well	Oxhide Eastern Drainage	Gila Conglomerate	33° 22' 35" N	110° 54' 40" W

* These sixteen (16) POCs are established by groundwater monitoring wells which are already installed, but will not be required to be monitored under this APP at this time. The groundwater quality at these POCs is characterized by acidic metal-bearing groundwater, and these POCs are located in areas impacted by contamination currently being remediated under the WQARF Program. Once remediation under the WQARF Program is completed, ADEQ shall amend this permit to establish ALs and AQLs, based on the WQARF cleanup levels approved by ADEQ, and to initiate compliance monitoring for these sixteen groundwater monitor wells. Until that time, the analytical results of the WQARF required monitoring of groundwater in these wells must be forwarded to the Groundwater Section, APP & Drywell Unit (GWS/APPDWU).

IV. STORMWATER AND SURFACE WATER CONSIDERATIONS

The mine areas in this permit are contained within ephemeral streams comprising the Pinal Creek Drainage Basin. Surface water drains to the south, into Bloody Tanks Wash, from the southwestern portions of the site, and eastward into Pinal Creek from the northeastern portions of the site. There are no nearby perennial surface water bodies. All drainages in the vicinity are ephemeral. Stormwater from upgradient areas is diverted around permitted facilities, as appropriate. The permitted facilities are sized to incorporate the 100-year/24-hour storm event, while maintaining appropriate freeboard**.** Stormwater Multi-Sector General Permit AZR05B292 (reissuance pending), are relevant to on-site mining operations.

V. COMPLIANCE SCHEDULE

The compliance schedule requires the completion of numerous items related to engineering, hydrologic and general issues.

The compliance schedule sets enforceable deadlines for ambient monitoring and compliance monitoring for the three active POC wells. Also included is a requirement to submit a Contingency and Emergency Response Plan.

Action Leakage Rate and Rapid and Large Leakage Rates are required for five facilities that contain LCRS in their construction.

Twelve facilities require the submission of facility design and/or as-built drawings or other engineering information for evaluation, and possible design upgrades. The compliance schedule includes deadlines for the completion of necessary upgrades.

Two facilities require the submission of closure plans, with deadlines for the completion of closure activities.

VI. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

Phelps Dodge Miami, Inc. has demonstrated the technical capability necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B).

ADEQ requires that appropriate documents be sealed by an Arizona registered geologist or professional engineer. This requirement is a part of an on-going demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

Phelps Dodge demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The estimated closure and post-closure costs are $23,547,573 and $213,268, respectively. The financial assurance mechanism was demonstrated

through A.A.C. R18-9-A203(C)(8). As the new owner, Freeport McMoran must demonstrate their Financial Capability and the Financial Assurance mechanism they will use within 3 months of permit issuance as indicated in Section 3.0 of the permit.

Zoning Requirements
Mines are exempt from zoning requirements per A.R.S. § 11-830.

VII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-108(A))
The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

Public Comment Period (A.A.C. R18-9-109(A))
The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-109(B))
A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

VIII. ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality
Groundwater Section–APP & Drywell Unit
Attn: Barry Rechtorovich
1110 W. Washington St., Mail Code 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771-4789